

distention the last week, and complete retention on admission to the hospital. The urethra could be felt through the vagina as a hard, fixed ridge the size of a lead-pencil, extending from the meatus nearly to the base of the bladder. The external meatus was retracted, its edges hard, irregular, and nodular. There was no involvement of the cervix, uterus, or vagina. With some difficulty a small ureteral catheter was introduced through the urethra and left in place. After some days a larger catheter was passed, but the retention persisted. Surgery was considered inadvisable, as it would have been necessary to remove the entire urethra up to the neck of the bladder, with resulting incontinence. Recourse was therefore had to radium treatments, nine applications of 20 mg. of radium element, of three hours each, being made in the course of about three weeks. The first few drops of urine were passed spontaneously about ten days after the first treatment, the quantity then gradually increasing, until soon after the last treatment the bladder could be completely emptied in a normal manner. The urethra still retained its pencil-like feel, however, and a small piece of tissue removed at the edge of the meatus showed microscopically a squamous-cell carcinoma. The inguinal lymphatics were not palpably enlarged, but their removal was advised, whereupon the patient disappeared, considering herself well. It is evident, therefore, that a definite cure cannot be claimed for the radium treatment in this case; nevertheless, such might have eventually been attained had the patient remained under observation, and, at any rate, it seems probable that a greater amount of amelioration was obtained than would have been possible by any other means.

## HYGIENE AND PUBLIC HEALTH

UNDER THE CHARGE OF

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### Effects of Refrigeration upon Larvæ of *Trichinella Spiralis*.—

Until two years ago, it had been generally accepted as an established fact that the larvæ of *Trichinella spiralis* are very resistant to cold and that they survive exposure to temperatures much below the freezing point of water. RANSOM (*Science*, New York, 1914, xxxix, 181) in a brief article showed that the former ideas concerning the resistance of trichinæ to cold were erroneous, and that as a matter of fact low temperatures have a very pronounced effect upon the vitality of these parasites. RANSOM, in a recent article (*Jour. Agricult. Research*,

January 31, 1916), gives the results of experiments on the effects of low temperatures upon the trichinous larvæ. In the practical application of refrigeration as a means of destroying the vitality of trichinæ, meat should be refrigerated at a temperature not higher than 5° F. for not less than twenty days, a period which allows a probable margin of safety of nearly ten days. The employment of higher temperatures of refrigeration as a means of destroying the vitality of trichinæ is not justified in the light of our present knowledge because of the uncertainty of the effects of such temperatures. Whether temperatures higher than 5° F. may be safely employed by lengthening the period of refrigeration remains to be determined. It is at once evident that refrigeration is a better safeguard than microscopic examination. The combination of refrigeration and thorough cooking would protect man against trichinosis.

**The Prophylaxis of Tetanus.**—A valuable summary of the literature on the prophylaxis of tetanus has been written by A. T. MACCONKEY (*Brit. Med. Jour.*, December 11, 1915). Regarding the value of prophylactic injections of antitetanic serum, the author says that the experience of the British Army has shown that the proceeding has a well-established value, for in the last six months there have been only 36 cases of the disease among those who received a preventive dose of serum within twenty-four hours after being wounded. The accompanying table shows the results which other investigators have obtained:

Investigator.	No. of wounded.	Cases of tetanus.	No. injected.	Cases among them.
Bazy . .	10,896	129	100	1
Hartmann .	3,373	43	Number not given	No cases reported.
Gasch . .	700	1	70	0
Hufnagel .	2,193	27	1,195	0
Goldscheider	1,427	4	500	4 <sup>1</sup>
Madelung .	15,134	101	Number not given	No cases reported.
Heile . .	...	...	4	0

The author's conclusions that although too great reliance should not be placed upon the figures quoted, yet from this experimental evidence it may be gathered that the army medical officers have found tetanus antitoxin of great value when used prophylactically, thus confirming by the severe test of active service the value as estimated before the war. The author next discusses the number of U. S. A. units of antitoxin which should be given as a prophylactic dose. In considering this matter, it becomes necessary to specify the kind of unit referred to as 1 German unit—40 U. S. A. units, while various investigators—Behring, Rosenau and Anderson and MacConkey have found the number of U. S. A. units in samples of French serum to vary, the general conclusion being, however, that the usual prophylactic dose of 10 c.c. of Pasteur Institute serum equals some 600 U. S. A. units. The doses recommended by fifteen different writers are cited, and the conclusion is drawn that from 500 to 1000 U. S. A. units of tetanus antitoxin is a sufficiently large prophylactic dose for the great majority of injuries, provided it is given early. Some cases are described, however, in which

<sup>1</sup> Such cases should probably not be included, as there were other complications.